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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/777,681	02/07/2001	Kazuo Hakamata	Q61216	3338

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EXAMINER
LEE, SHUN K

ART UNIT	PAPER NUMBER
2878	

DATE MAILED: 08/26/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/777,681	Applicant(s) HAKAMATA, KAZUO
	Examiner Shun Lee	Art Unit 2878

-- The MAILING DATE of this communication appears on th cover she t with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *22 May 2003 & 23 June 2003* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-14* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-14* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☒ The proposed drawing correction filed on *14 August 2002* is: a)☒ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submissions filed on 22 May 2003 and 23 June 2003 have been entered.

Election/Restrictions

2. In view of applicant's arguments (third paragraph on pg. 8 of remarks filed 22 May 2003) and upon reconsideration, the restriction requirement as to the encompassed species is hereby withdrawn and claims 1, 2, and 8 are no longer withdrawn from consideration.

In view of the above noted withdrawal of the restriction requirement as to the linked species, applicant(s) are advised that if any claim(s) depending from or including all the limitations of the generic linking claim(s) be presented in a continuation or divisional application, such claims may be subject to provisional statutory and/or nonstatutory double patenting rejections over the claims of the instant application. Once a restriction requirement is withdrawn, the provisions of 35 U.S.C. 121 are no longer applicable. See *In re Ziegler*, 44 F.2d 1211, 1215, 170 USPQ 129, 131-32 (CCPA 1971). See also MPEP § 804.01.

Drawings

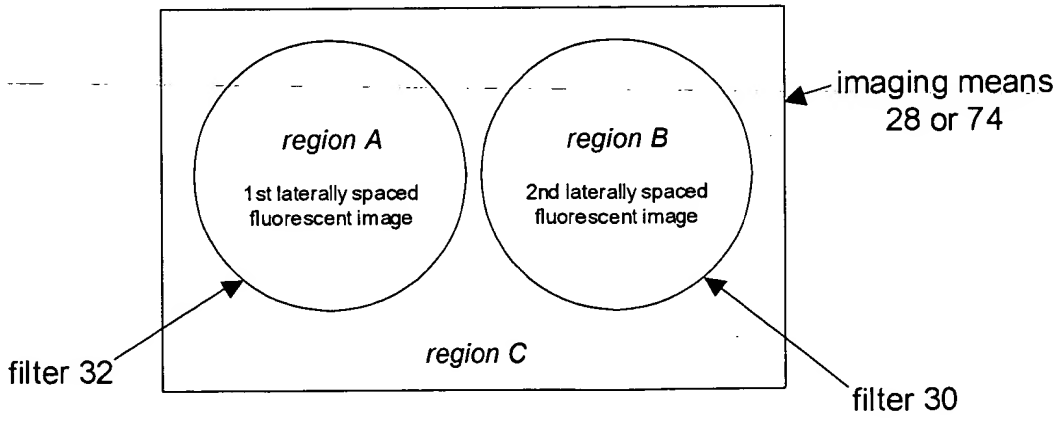
3. The proposed drawing correction and/or the proposed substitute sheets of drawings, filed on 14 August 2002 have been approved. A proper drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The correction to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 1-5, 8, 10, and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lazarev *et al.* (US 5,986,271) in view of Wilder *et al.* (US 5,262,871).



In regard to claims **1-4** and **8**, Lazarev *et al.* disclose (Figs. 2, 3, and 8) a fluorescence imaging apparatus, comprising:

(a) excitation light irradiating means (16) for irradiating excitation light to a measuring site (51), the excitation light causing the measuring site (51) to produce fluorescence (column 5, lines 1-3),

(b) imaging means (28 or 74) for imaging the fluorescence, which has been produced from the measuring site (51) when the excitation light is irradiated to the measuring site (51), wherein the imaging means (28 or 74) is provided with an image sensor (*e.g.*, a charge transfer type image sensor; column 11, lines 45-55), which comprises a plurality of pixels arrayed in two-dimensional directions and which has a fluorescence imaging region (*e.g.*, an area within region A and/or B) utilized for the imaging of the fluorescence and a non-imaging region other than the fluorescence imaging region, wherein the non-imaging region comprises a region (*e.g.*, an area within region C) where the fluorescence is not received (since a pair of rhomboidal prisms 144, 146 in Fig. 8 or a pair of optical wedges 76 in Fig. 2 is used to produced laterally spaced images that pass through respective ones of filters 30, 32; column 6, lines 50-65; column 10, lines 56-67), and

(c) imaging control means (34) for controlling operations of the imaging means (28 or 74).

The apparatus of Lazarev *et al.* lacks that the imaging control means controls such that, when signal charges are to be read from the image sensor (*e.g.*, a random access type image sensor), signal charges which have been accumulated in pixels falling within the non-imaging are read (*i.e.*, quick reading or binning reading) and/or prevented from being read. Wilder *et al.* teach (abstract; column 6, lines 40-44; column 17, lines 64-66)

a random access type image sensor wherein multiple regions of interest with each region having a resolution that can be independent of other regions of interest and that all pixels can be read or alternatively some pixels are unread (*i.e.*, prevented from being read). Wilder *et al.* further teach (column 18, lines 7-12) that unimportant pixels can be quickly read out as parts of large superpixels (*i.e.*, binning reading) in order minimize the time consumed in reading unimportant pixels. Therefore it would have been obvious to one having ordinary skill in the art that unimportant pixels (*e.g.*, pixels in region other than the fluorescence imaging region) in the apparatus of Lazarev *et al.* are read (*i.e.*, quick reading or binning reading as parts of large superpixels) and/or prevented from being read, in order to minimize the time consumed in reading unimportant pixels as taught by Wilder *et al.*

In regard to claim **5** which is dependent on claim 3 or 4, the apparatus of Lazarev *et al.* lacks that the image sensor is provided with a clearing section for clearing signal charges, which have been accumulated in pixels. Wilder *et al.* also teach (column 17, line 62 to column 18, line 6) a first reading frame (*i.e.*, clearing section) where pixel signals are discarded in order to prevent spurious data. Therefore it would have been obvious to one having ordinary skill in the art to provide a clearing section (*i.e.*, first reading frame) in the apparatus of Lazarev *et al.*, in order to prevent spurious data as taught by Wilder *et al.*

In regard to claims **10** and **11** which are dependent on claim 3, the apparatus of Lazarev *et al.* lacks that the imaging control means stored data indicating which regions of the image sensor corresponds to non-imaging areas (*e.g.*, on a line by line basis) and

prevention of reading of signal charges based on the stored data. Wilder *et al.* teach (column 4, lines 45-66) that the readout is controlled with supervisory signals from a processor/computer with predetermined pixel readout instructions (*i.e.*, stored data). Therefore it would have been obvious to one having ordinary skill in the art that control of the readout in the apparatus of Lazarev *et al.* occurs via predetermined pixel readout instructions as taught by Wilder *et al.*

6. Claims 6, 7, 9, and 12-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lazarev *et al.* (US 5,986,271) in view of Wilder *et al.* (US 5,262,871) as applied to claims 3-5 above, and further in view of Talmi *et al.* (US 5,821,547).

In regard to claim **6** (which is dependent on claim 3 or 4) and claim **7** (which is dependent on claim 5), the modified apparatus of Lazarev *et al.* lacks that the image sensor is provided with horizontal shifting means, from which the signal charges are read in one direction, the imaging control means controls such that the signal charges having been accumulated in the pixels are transferred to the horizontal shifting means and are then read from the horizontal shifting means, and the fluorescence imaging region is located at a position shifted from a center position on an imaging surface of the image sensor toward a side corresponding to a read-out side of the horizontal shifting means. Lazarev *et al.* also disclose (Fig. 3) that a fluorescence imaging region (*e.g.*, 30) is located at a position shifted from a center position on an imaging surface of the image sensor (28). Talmi *et al.* teaches (column 4, line 58 to column 5, line 3) a horizontal shifting means (*i.e.*, shielded portion) such that the signal charges having been accumulated in the pixels are transferred to the horizontal shifting means in order

to increase the signal to noise (column 5, lines 21-40). Therefore it would have been obvious to one having ordinary skill in the art to provide a horizontal shifting means for the off-centered fluorescence imaging region (30) in the modified apparatus of Lazarev *et al.*, in order to increase the signal to noise as taught by Talmi *et al.*

In regard to claim **9** (which is dependent on claim 3) and claim **12** (which is dependent on claim 6), the modified apparatus of Lazarev *et al.* lacks that the non-imaging region is blocked by an opaque film. Talmi *et al.* teaches (column 1, lines 34 and 35) light shielded dark reference rows and columns surround the active area. Therefore it would have been obvious to one having ordinary skill in the art to provide an opaque film for the non-imaging region in the modified apparatus of Lazarev *et al.*, in order to provide dark reference rows and columns as taught by Talmi *et al.*

In regard to claims **13** and **14** which are dependent on claim 6, Wilder *et al.* is applied as in claims 10 and 11 above.

Response to Arguments

7. Applicant's arguments filed 22 May 2003 have been fully considered but they are not persuasive.

First, it is noted that independent claims 3 and 4 have been amended to include the limitation "wherein the non-imaging region comprises a region where the fluorescence is not received". The key phrase is "comprises". Thus the scope of the claims encompasses a non-imaging region having a first region where the fluorescence is not received and a second region where the fluorescence is received.

Applicant argues (last two paragraphs on pg. 3 of remarks filed 22 May 2003) that the spatially separate images of Lazarev *et al.* do not relate to different spaces such as an imaging region and a non-imaging region. Examiner respectfully disagrees. It should be noted that two regions of the imaging means are designated as a fluorescence imaging region and a non-imaging region. The fluorescence imaging region is utilized for the imaging of the fluorescence and the non-imaging region is a region other than the fluorescence imaging region, wherein the non-imaging region comprises a region where the fluorescence is not received. As discussed above, the scope of the claims encompasses a non-imaging region having a first region where the fluorescence is not received and a second region where the fluorescence is received. Thus region A and C (as illustrated above) can be designated as a non-imaging region (as defined in the claims) when region B (as illustrated above) is designated as a fluorescence imaging region.

Applicant than argues (second paragraph on pg. 4 of remarks filed 22 May 2003) designating only area 32 instead of areas 30 and 32 represents a shift in position that provides a tacit recognition that the prior analysis includes fundamental flaws. Examiner respectfully disagrees. As discussed above, the scope of the claims encompasses a non-imaging region having a first region where the fluorescence is not received and a second region where the fluorescence is received. Thus region C (as illustrated above) can be designated as a non-imaging region (as defined in the claims) when regions A and B (as illustrated above) are designated as a fluorescence imaging

region. Therefore region A, region B, or both can be designated as the fluorescence imaging region (as defined in the claims).

Applicant further argues (last paragraph on pg. 4 of remarks filed 22 May 2003) that the non-imaging region cannot include two regions since the sensor obtains two fluorescent images. Examiner respectfully disagrees. As discussed above, the scope of the claims encompasses a non-imaging region having a first region where the fluorescence is not received and a second region where the fluorescence is received. Thus region C (and optional either region A or region B) can be designated as the non-imaging region (as defined in the claims).

It is noted that independent claim 3 recite the limitation "in at least certain pixels among pixels falling within the non-imaging region, are prevented from being read" and independent claim 4 recite the limitation "pixels falling within the other area of the non-imaging region, are prevented from being read". Thus the scope of the claims encompasses regions of the non-imaging region where the pixels are read (*e.g.*, with a "quick reading operation").

Applicant argues (first paragraph on pg. 5 of remarks filed 22 May 2003) that Lazarev *et al.* teaches away from preventing reading of the non-imaging region since area 32 needs to be read in accordance with Eq. 2 of Lazarev *et al.* Examiner respectfully disagrees. As discussed above, the scope of the claims encompasses areas of the non-imaging region where the pixels are read. Since parts of the non-imaging region are read (*e.g.*, area 32), it would have been obvious to one having ordinary skill in the art that unimportant pixels in the apparatus of Lazarev *et al.* are prevented from being read, in order to minimize the time consumed in reading

unimportant pixels (*e.g.*, pixels falling in region C illustrated above) as taught by Wilder *et al.*

In response to applicant's argument (last paragraph on pg. 5 of remarks filed 22 May 2003) that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (*i.e.*, areas outside the region of interest are not formed as image forming areas) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993). Applicant should note that independent claims 3 and 4 recite the limitation of "a non-imaging region other than the fluorescence imaging region, wherein the non-imaging region comprises a region where the fluorescence is not received". As discussed above, the scope of the claims encompasses a non-imaging region having a first region where the fluorescence is not received and a second region where the fluorescence is received.

Applicant argues (last two paragraphs on pg. 6 of remarks filed 22 May 2003) that an entire image must be initially imaged and that pixels bypassed during the readout process still hold image information leading to an infinite optical integration time that would saturate an output device. In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). In this case, it is clear that certain pixels (*e.g.*, pixels

falling in region C illustrated above) in the invention of Lazarev *et al.* are *a priori* known as unimportant pixels since region C is defined by the filters 30 and 32 and it is regions A and B that contain the fluorescent images. Therefore, it would have been obvious to one having ordinary skill in the art that the *a priori* known unimportant pixels (*e.g.*, pixels falling in region C illustrated above) in the apparatus of Lazarev *et al.* are prevented from being read, in order to minimize the time consumed in reading unimportant pixels as taught by Wilder *et al.*

Applicant then argues (third paragraph on pg. 7 of remarks filed 22 May 2003) that the region 32 of Lazarev *et al.* must be designated as part of "fluorescence imaging region" and thus the fluorescence imaging region is centered. Examiner respectfully disagrees. Lazarev *et al.* state (column 1, lines 43-48) that "Each of the laterally spaced images are passed through respective ones of filters 30, 32 to the photosensitive front surface of LLL image pickup device 28. Beam splitter assembly 58 also includes a lens 78 for focusing the pair of laterally separated images onto the LLL image pickup device 28. Lenses 70 and 78 may be variable focus or zoom type lenses to accommodate endoscopes having field stops of various sizes" which is illustrated in Figs. 2 and 3. Thus an endoscope field stop (60 in Fig. 2) having a pre-determined size defines the lateral size of the image which is focus onto the second image sensor (28 in Fig. 3). Therefore it is clear that Lazarev *et al.* disclose that a fluorescence imaging region on the second image sensor (28 in Fig. 3) have a lateral size defined by the endoscope field stop which is within the area of the filter (30 in Fig. 3) since the laterally spaced image pass through a filter (*e.g.*, 30 in Fig. 3). As discussed above, the scope of the claims encompasses a non-imaging region having a first region (where the fluorescence is not received) and a second region (where the

fluorescence is received) and wherein certain pixels falling within the non-imaging region are read. Thus, Lazarev *et al.* disclose an off centered fluorescence imaging region on the second image sensor (28 in Fig. 3) have a lateral size defined by the endoscope field stop which is within the area of a filter (*e.g.*, 30 in Fig. 3). Moreover, even if the fluorescence imaging region comprises the two laterally spaced fluorescent images each having a lateral size defined by the endoscope field stop which is within the area of filters 30 and 32, applicant has failed to provide any evidence that the fluorescence imaging region comprises the two laterally spaced fluorescent images are centered on the detector.

Applicant further argues (last paragraph on pg. 7 of remarks filed 22 May 2003) that if region 32 of Lazarev *et al.* were blocked by an opaque film, this would defeat the principle of operation of Lazarev *et al.* Examiner respectfully disagrees. As discussed above, the scope of the claims encompasses a non-imaging region having a first region (where the fluorescence is not received) and a second region (where the fluorescence is received) and wherein certain pixels falling within the non-imaging region are read. Thus with the scope of the claims, region 32 could be included within either the fluorescence imaging region or the non-imaging region. Talmi *et al.* teaches (column 1, lines 34 and 35) light shielded dark reference rows and columns surround the active area. Therefore it would have been obvious to one having ordinary skill in the art to provide an opaque film for the non-imaging region in the modified apparatus of Lazarev *et al.*, in order to provide dark reference rows and columns as taught by Talmi *et al.*

Applicant further argues (second paragraph on pg. 8 of remarks filed 22 May 2003) that that the row and column control does not indicate setting of reading corresponding to a non-image area. Examiner respectfully disagrees. Wilder *et al.* teach (column 4, lines 45-66) that the readout is controlled with supervisory signals from a processor/computer with predetermined pixel readout instructions (*i.e.*, stored data). Wilder *et al.* also teach (abstract; column 6, lines 40-44; column 17, lines 64-66) a random access type image sensor wherein multiple regions of interest with each region having a resolution that can be independent of other regions of interest and that all pixels can be read or alternatively some pixels are unread (*i.e.*, prevented from being read). Wilder *et al.* further teach (column 18, lines 7-12) that unimportant pixels can be quickly read out as parts of large superpixels (*i.e.*, binning reading) in order minimize the time consumed in reading unimportant pixels. Thus it is clear that Wilder *et al.* teach predetermined pixel readout (*e.g.*, read or do not read) instructions for multiple regions of interest and non-interest (*i.e.*, the fluorescence imaging region and the non-imaging region).

In response to applicant's argument (fourth paragraph on pg. 8 of remarks filed 22 May 2003) that a time for reading is shorten thus allowing a low luminance image to be read efficiently, the fact that applicant has recognized another advantage which would flow naturally from following the suggestion of the prior art cannot be the basis for patentability when the differences would otherwise be obvious. See *Ex parte Obiaya*, 227 USPQ 58, 60 (Bd. Pat. App. & Inter. 1985).

Conclusion

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shun Lee whose telephone number is (703) 308-4860. The examiner can normally be reached on Monday-Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Porta can be reached on (703) 308-4852. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9318 for regular communications and (703) 872-9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

CONSTANTINE HANNAHER
PRIMARY EXAMINER
GROUP ART UNIT 2878

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August 21, 2003